



# INSTALLATION INSTRUCTIONS



## AUT SERIES SURGICAL LIGHTS

**LFS, AUT\_H (Variable Height Hub) &  
AUT\_ (Extended Length Arm) Models**

Read this manual before starting to work! This information is necessary for the safe and efficient operation of the equipment.

## COMPETENCY AND INSTALLATION REQUIREMENTS

This product is a Class 2 medical device that is subject to FDA Part 820 requirements. Installation can only take place by qualified and trained individuals. An Installation Qualification Report is required as proof of system operational validation prior to clinical use. Contact Skytron for installation needs.

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The base language for this document is ENGLISH. Any translations must be from the base language document.

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Although current at the time of publication, SKYTRON'S policy of continuous development makes this manual subject to change without notice. If current manuals are required, contact your local SKYTRON representative or contact SKYTRON directly at the distribution addresses listed above.

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## SECTION 1. SAFETY INFORMATION

### 1-1. Special User Attention

The procedures described in this manual will be performed by representatives of the owner (staff or contracted service), therefore it is the responsibility of the owner to ensure that all safety precautions are followed. Only qualified and trained individuals should attempt the installation of this product.

### 1-2. Safety Precautions

The following is a summary of DANGERS, WARNINGS, and CAUTIONS denoted in this manual. These precautions are found throughout the manual where they are applicable. Carefully read the manual before proceeding to operate or service the equipment.



#### DANGER

DANGER with the safety alert symbol, is used to indicate a hazardous situation that, if not avoided, will result in death or serious injury.



#### WARNING

WARNING with the safety alert symbol, is used to indicate a hazardous situation that, if not avoided, could result in death or serious injury.

**To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth ground.**

**DO NOT remove lighthouse when support arm is in down position. The BOM will be severely damaged and it may result in bodily injury.**



#### CAUTION

CAUTION with the safety alert symbol, is used to indicate a hazardous situation that, if not avoided, could result in minor or moderate injury.

**This fixture requires that electrical connections are made by a licensed electrician in accordance with state, local, and national electrical codes using UL (Underwriters Laboratory) recognized materials.**

**Connection of the fixture wires must be made using crimp connectors. Main terminal devices shall be so located or shielded that, should a wire of a stranded conductor escape when the conductors are fitted, there is no risk of accidental contact between live parts and accessible parts. Acceptable shielding methods include UL approved shrink tubing and electrical tape. DO NOT use damaged wire.**

**Use a Genie lift or other appropriate lifting device to install each RAA.**

#### CAUTION

CAUTION without the safety alert symbol, is used to address practices not related to personal injury but with a possibility of damage to equipment.

This equipment is intended for use by healthcare professionals only. This equipment may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as re-orienting or relocating the lighthouse or shielding the location.

This fixture requires two (2) dedicated conduit raceways at the wall control to separate the 100-240VAC facility supply lines from the DC supply lines to the lighting fixture. Failure to observe this requirement will allow the migration of electrical magnetic interference and will disrupt the operation of the lights.

**CAUTION (CONT'D)**

This fixture requires a properly circuit protected, appropriately sized, dedicated circuit. An isolated power supply circuit must be protected by an appropriately sized double pole, single throw circuit breaker.

SKYTRON surgical lights are packaged in special containers designed to prevent damage from vibration or shock. Always use SKYTRON supplied containers for shipment.

Aurora 3 lightheads operate on DC VOLTAGE. The PC boards are susceptible to static charges even when not powered. Pay close attention to wiring diagrams, wire labeling and

color codes. White wires (neutral) on lightheads must remain separate and not touch any other wire or metal parts. Incorrect wiring may result in incorrect polarity being supplied to the lighthead. This WILL DAMAGE internal circuitry and components VOIDING WARRANTY.







The mounting hub must be accurately leveled within 0.1° to prevent lighthead drift.

To prevent support arm damage, the longer screws must be installed in the holes towards the lighthead.

**NOTICE**

Indicates important information not related to personal injury.

**1-3. Label Symbols**

Symbol	Description
	With the word DANGER, indicates a hazardous situation that, if not avoided, will result in death or serious injury.
	With the word WARNING, indicates a hazardous situation that, if not avoided, could result in death or serious injury. With the word CAUTION, indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.
	Indicates AC power supply.
	Indicates authorized representative in the european community.
	Indicates Manufacturer.
	Indicates Dangerous Voltage 100-240V ~, 50/60Hz.

## SECTION 2. EQUIPMENT SPECIFICATIONS / REQUIREMENTS

### CAUTION

This equipment is intended for use by healthcare professionals only. This equipment may cause radio interference or may disrupt the operation of nearby equipment. It may be necessary to take mitigation measures, such as re-orienting or relocating the lighthead or shielding the location.

#### 2-1. Permissible Environmental Conditions

##### a. During Transport and Storage (in Original Packaging Materials)

- *Ambient Temperature:*  
14° to 140° F (-10 to 60 °C)
- *Relative Humidity:*  
10% to 85% (No Condensation)
- *Atmospheric Pressure:*  
14 to 31 inHg (500 to 1060 hPa)

##### b. During Use - For Dry Locations

- *Ambient Temperature:*  
60° to 85° F (15 to 30 °C)
- *Relative Humidity:*  
30% to 60% (No Condensation)
- *Atmospheric Pressure:*  
20.7 to 31.3 inHg (700 to 1060 hPa)

#### 2-2. Electrical Requirements



### CAUTION

**This fixture requires that electrical connections are made by a licensed electrician in accordance with state, local, and national electrical codes using UL (Underwriters Laboratory) recognized materials.**

DO NOT turn on main power to fixture until all lightheads are installed, connections are complete, and the fixture has been reviewed by a SKYTRON representative.

**ELECTRICAL HAZARDS EXIST!**

Exercise caution when working on this fixture, the installation of this fixture must be made only by qualified and authorized personnel familiar with the essential knowledge and techniques.

#### 2-3. ESD Sensitive Devices

When installing devices with electronic circuit boards (e.g., lightheads, wall control units), appropriate precautions should be taken to prevent damage caused by electrostatic discharge (ESD). These precautions include as a minimum, the use of an ESD wrist strap that is properly connected to an ESD ground.

#### 2-4. Connection Means



### CAUTION

**Connection of the fixture wires must be made using crimp connectors. Main terminal devices shall be so located or shielded that, should a wire of a stranded conductor escape when the conductors are fitted, there is no risk of accidental contact between live parts and accessible parts. Acceptable shielding methods include UL approved shrink tubing and electrical tape. DO NOT use damaged wire.**

#### 2-5. National Electric Code, NFPA & ANSI Requirements

The installation of connecting cords between equipment parts shall meet the requirements of the National Electrical Code, ANSI/NFPA70, IEC 60601-1 and all local codes, as applicable.

## 2-6. Bending Requirements

Connection leads shall be constructed in such a manner that moveable leads in normal use are not bent around a radius of less than five times the outer diameter of the lead concerned. Avoid conditions employing severe bends to ensure the integrity of conductors.

## 2-7. Conduit Requirements

### CAUTION

This fixture requires two (2) dedicated conduit raceways at the wall control to separate the 100-240VAC facility supply lines from the DC supply lines to the lighting fixture. Failure to observe this requirement will allow the migration of electrical magnetic interference and will disrupt the operation of the lights.

Use of approved metal conduit shall be employed throughout the fixture's wiring circuit where applicable.

## 2-8. Protective Means



### WARNING

**To avoid the risk of electric shock, this equipment must only be connected to a supply mains with protective earth ground.**

### CAUTION

This fixture requires a properly circuit protected, appropriately sized, dedicated circuit. An isolated power supply circuit must be protected by an appropriately sized double pole, single throw circuit breaker.

Proper performance and safety of this fixture can only be achieved by an adequate grounding system. Fixture ground must be a dedicated ground point ultimately bonded to the facilities grounding system to prevent the migration of electrical interference generated by other devices.

## 2-9. Final Assembly

All installations of SKYTRON surgical lights should be under the direct supervision of a SKYTRON authorized representative.

Prior to the fixture being placed in service, the SKYTRON authorized representative must initialize the fixture and complete the installation report.

To maintain product warranty and performance, this product requires routine service. Contact your SKYTRON representative for factory service or preventive maintenance contracts.

## 2-10. Fail Safe Compliance

In order for dual or triple lighthouse systems to maintain fail safe compliance, a battery back up (UPS) or generator back up power system must be provided in the mains wiring prior to the wall control which will restore power in five (5) seconds or less.

### NOTICE

Fail safe devices are not supplied by SKYTRON.

## 2-11. Shipping

### CAUTION

SKYTRON surgical lights are packaged in special containers designed to prevent damage from vibration or shock. Always use SKYTRON supplied containers for shipment.



## SECTION 3 MODEL IDENTIFICATION

Model	Configurations	Description
LFS (Flat Screen)	LFSAUT <ABC>	Ceiling mounted radial support arm for one (1) flat screen with up to three (3) Aurora 3 lightheads <ABC>. Where <ABC> can be any combination of center focus (e.g., AUT5, 7) and/or camera ready (e.g., AUT5TV, 7TV) lighthead.
	LFSLFSAUT <AB>	Ceiling mounted radial support arms for two (2) flat screens with up to two (2) Aurora 3 lightheads <AB>. Where <AB> can be any combination of center focus (e.g., AUT5, 7) and/or camera ready (e.g., AUT5TV, 7TV) lighthead.
AUT_ (Extended Length Arm)	AUT <A> - <X>)	Ceiling mounted radial arm for one (1) Aurora 3 lighthead <A> that is an extended length radial arm with an arm length of <X>. Where <A> can be either a center focus (e.g., AUT5, 7) and/or camera ready (e.g., AUT5TV, or 7TV) lighthead.
	AUT <AB> - <X/Y>	Ceiling mounted radial arm for two (2) Aurora 3 lightheads <AB> that have extended radial arms with arm lengths of <X/Y>. Where <AB> can be any combination of center focus (e.g., AUT5, 7) and/or camera ready (e.g., AUT5TV, 7TV) lighthead.
AUT_H (Variable Height Hub)	AUT <A> H - <X>	Ceiling mounted radial arm for one (1) Aurora 3 lighthead <A> that has an extended hub (H) with a radial arm length of <X>. Where <A> can be either a center focus (e.g., AUT5, 7) and/or camera ready (e.g., AUT5TV, or 7TV) lighthead.
	AUT <AB> H - <X/Y>	Ceiling mounted radial arms for two (2) Aurora 3 lightheads <AB> that have an extended hub (H) with radial arm lengths of <X/Y>. Where <AB> can be any combination of center focus (e.g., AUT5, 7) and/or camera ready (e.g., AUT5TV, 7TV) lighthead.

**Notice**

All extended length arms and variable height hub models require signed submittal drawings.

## SECTION 4. PRE-INSTALLATION INSTRUCTIONS

### 4-1. Pre-Installation Requirements

Appropriate metal conduit and wiring must be installed from wall control mount to ceiling mounting structure. Flexible conduit to extend 18" below finished ceiling.

100-240VAC, circuit protected, dedicated power supply line in separate conduit to be provided at wall control.

Painting and flooring must be complete prior to fixture installation.

Finished ceiling height must be verified.

Optional camera system models require a 1" metal conduit from mounting plate to control unit J-box.

In some cases on LFS models, SKYTRON does not supply the flatscreen (FS) monitor. Please consult FS monitor instructions for specific details and requirements. Monitor weight cannot exceed 20 pounds (9.0 kg). Communication/video cables are provided by others.

The mounting structure for all arm systems must pass the SKYTRON "Test Jig" procedure. Refer to mounting structure guidelines in Section 6.

### 4-2. Installation Notes

Follow the installation instructions and utilize the SKYTRON Surgical Light Installation Report to assure proper installation and to meet the installation qualification requirements.

Additional materials required for proper installation include Loctite® compound.

Aurora Series lighting fixtures require a wall mounted control box. 3/4" metal conduit and minimum 12 AWG wire is required between wall control and fixture.

### 4-3. Uncrating

The SKYTRON surgical lighting fixture is normally shipped in four (4) to six (6) crates, depending on the model. A carton containing the vertical support tubes (VSTs), miscellaneous hardware, and various instructional materials is packed separately.

Should any damage to the fixture be noted while uncrating, further unpacking should be stopped and the container with all the wrappings held for inspection. The transportation company should be notified immediately so an inspector can be sent. Consult the Damaged Shipment Claim Procedure sheet for further details.

Personnel uncrating SKYTRON surgical lights should be aware that they are delicate medical equipment and special care in handling should prevail throughout installation.

#### a. Uncrating Light Fixture

Open the top of the lighthouse box and remove the packing material. Remove the sterilizable positioning handle, and lighthouse from the crate.

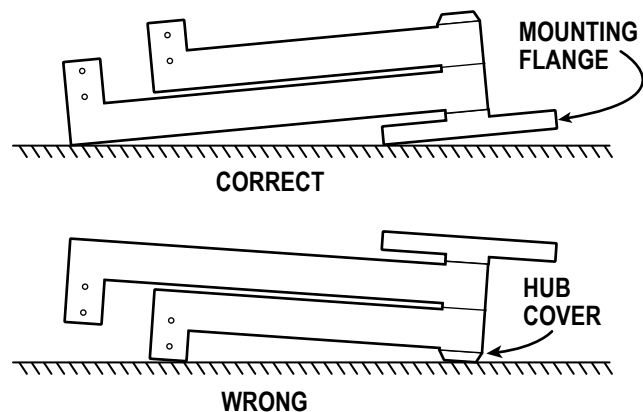
#### NOTICE

Details may vary depending upon model and support structure fabrication.

All fixtures use METRIC fasteners.

#### b. Radial Arm Assembly

When the radial arm assembly is removed from the crate and set on the floor prior to mounting it, be sure the mounting flange is toward the floor. If the arm assembly is set on the floor upside down the hub cover may be damaged (Figure 4-1).



**Figure 4-1. Radial Arm Assembly**

**c. Lightheads**

Use extreme caution when removing the contents from the crates to prevent damage to the lights. Leave the lightheads in their crates until ready to install.

If the lighthead must be set down after it is removed from the crate, always lay it on the foam shipping block. DO NOT lay lighthead on the front face.

**4-4. Specialty Tools and Equipment**

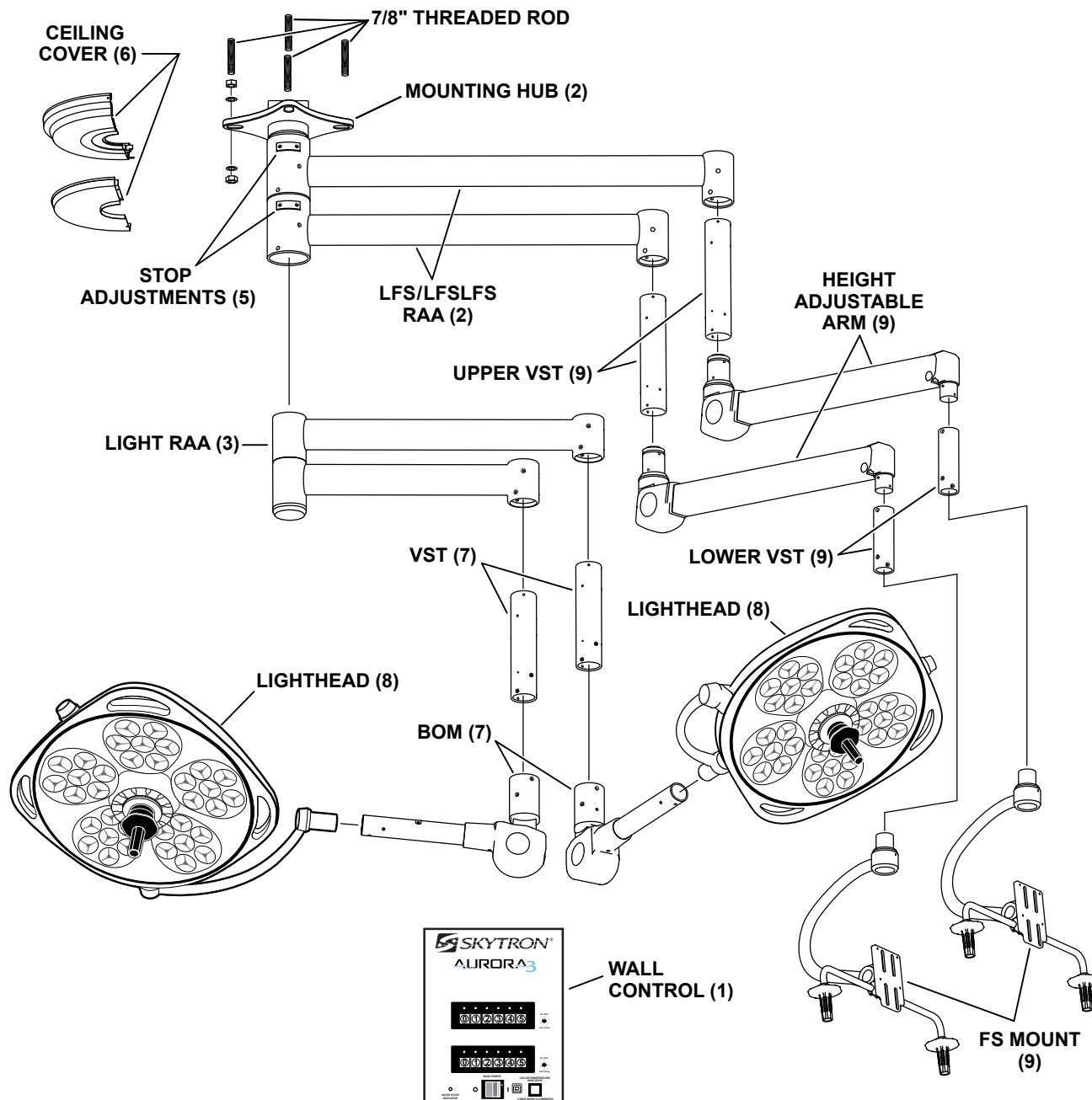
The following specialty tools and equipment are required for performing this installation:

- Metric hand tools
- Appropriately rated lifting device (Genie Lift)
- Digital level
- Torque wrench (ft-lbs)
- Metric sockets compatible with torque wrench

## SECTION 5. INSTALLATION

## 5-1. Installation Sequence

a. The LFSAUT lighting fixture should be installed in the following sequence (Figure 5-1):

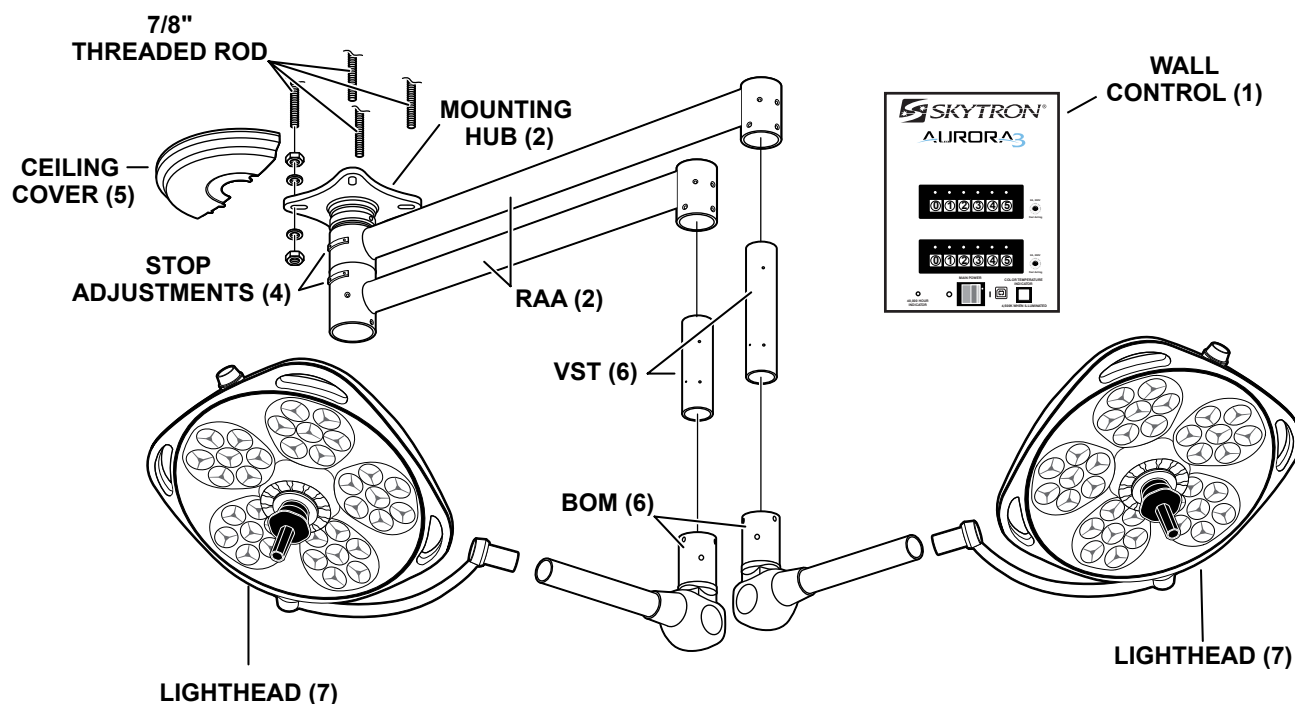


**Figure 5-1. LFS Installation Sequence (LFSAUT55 Shown)**

- |   |   |
|---|---|
| 1. Install Wall Control                                 | 6. Install Ceiling Cover                |
| 2. Install LFS/LFSLFS Radial Arm Assembly (RAA)         | 7. Install VST and BOM                  |
| 3. Install Light RAA to LFS/LFSLFS                      | 8. Install Lighthead                    |
| 4. Install Cable for Camera Ready Lighthead (Not Shown) | 9. Install Flatscreen Mounting Assembly |
| 5. Make RAA Stop Adjustments                            |   |

### b. Extended Arm/AUT\_H Installation Sequence

The extended arm and extended hub (AUT\_H) lighting fixture should be installed in the following sequence (Figure 5-2).



**Figure 5-2. Installation Sequence (AUT55-1500, 1300 Shown)**

1. Install Wall Control
2. Install Radial Arm Assembly
3. Install Cable for Camera Ready Lighthead (If Applicable)
4. Make RAA Stop Adjustments
5. Install Ceiling Cover(s)
6. Install VST and BOM
7. Install Lighthead

### CAUTION

Aurora 3 lightheads operate on DC VOLTAGE. The PC boards are susceptible to static charges even when not powered. Pay close attention to wiring diagrams, wire labeling and color codes. Wires on lightheads must remain separate and not touch any other wire or metal parts. Incorrect wiring may result in incorrect polarity being supplied to the lighthead. This WILL DAMAGE internal circuitry and components VOIDING WARRANTY.

## 5-2. Install Wall Control

### NOTICE

3/4" metal conduit and minimum 12AWG wire (3 wires per lighthead plus fixture ground) is required between wall control and fixture. Flexible conduit should extend 18" below finished ceiling.

### NOTICE

Separate dedicated conduit required for 100-240VAC supply lines to wall control.

All wiring to be in accordance with local, state and national electrical codes.

- a. Remove the front panel assembly from the wall control box for ease in wire connection. Remove the (4) screws. Set the front panel assembly aside.
- b. Install the wall control box enclosure as desired for the application (surface or recessed mount) as shown in the wall control illustration (Figure 5-3).
- c. Attach recess mount flange if required for recessed applications (Figure 5-3).

### NOTICE

Room placement of the wall control will vary by application. Always follow current standards from the NFPA (National Fire Protection Agency), NEC (National Electrical Code) and IEC (International Electrotechnical Commission) for proper compliance.

The selection of anchorage fasteners shall be determined by the engineer of record and will vary by application. The selected fasteners must not interfere with wall control components.

### NOTICE

Seismic applications require the use of approved fasteners.

- d. Connect the electrical conductors from front face plate assembly to the wiring from the fixture. Observe wire markings and colors. Avoid undue stress on conductors and internal components.

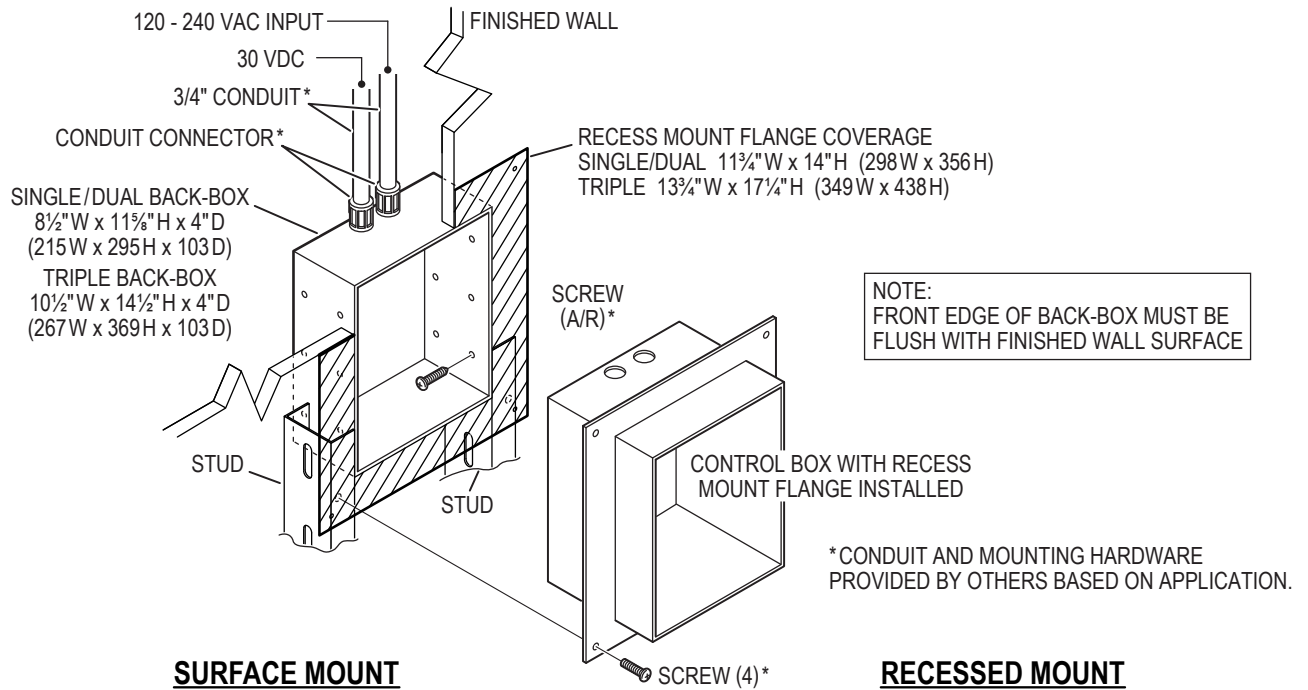


### CAUTION

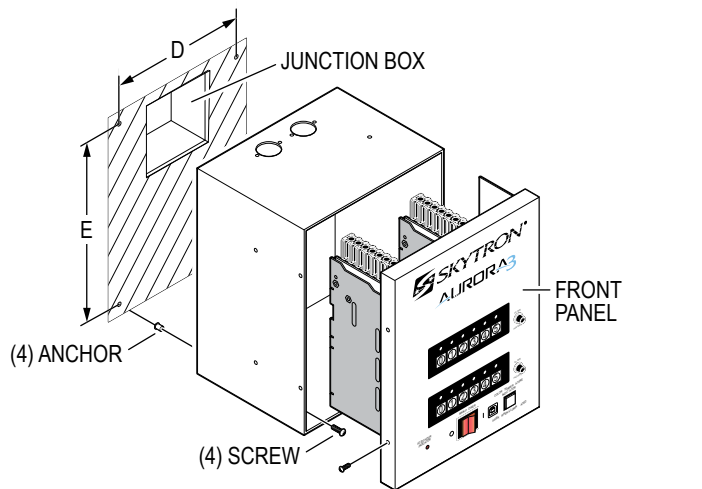
**Connection of the fixture wires must be made using crimp connectors. Main terminal devices shall be so located or shielded that, should a wire of a stranded conductor escape when the conductors are fitted, there is no risk of accidental contact between live parts and accessible parts. Acceptable shielding methods include UL approved shrink tubing and electrical tape. DO NOT use damaged wire**

- e. Make electrical connections using approved crimp connectors. Observe wire markings and colors (Figure 5-4).
- f. Attach the front panel assembly using the (4) screws removed in Step a. Use care to avoid pinching conductors and creating excessive bends in wiring.

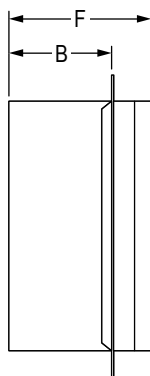
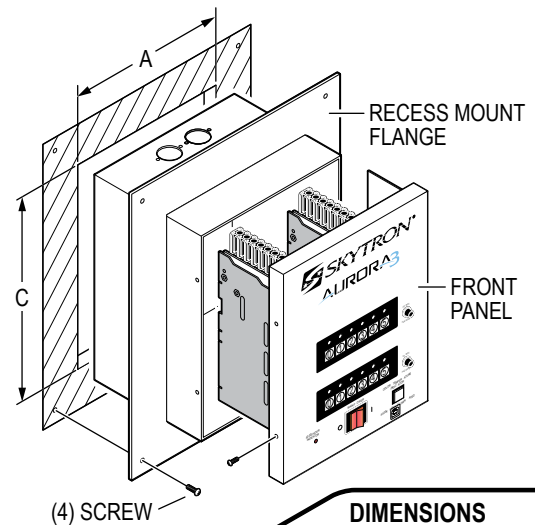
## OPTIONAL BACK-BOX INSTALLATION



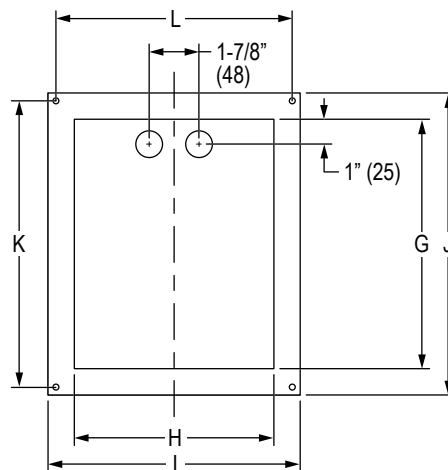
## SURFACE MOUNT



## RECESSED MOUNT



**SIDE VIEW**



**BACK VIEW**

## DIMENSIONS

	SINGLE/DUAL	TRIPLE
A	8-5/8" (220)	10-5/8" (270)
B	4" (100)	4" (100)
C	10-5/8" (270)	14" (355)
D	6-7/8" (175)	8-5/8" (220)
E	7-5/8" (195)	11" (280)
F	6" (153)	6-3/8" (162)
G	10" (255)	13-1/2" (343)
H	7-7/8" (200)	10" (253)
I	11-3/4" (298)	13-3/4" (348)
J	13-7/8" (353)	17-1/4" (438)
K	12-3/8" (315)	15-3/4" (400)
L	10-1/4" (260)	12-1/4" (310)

**Figure 5-3. Wall Control Mounting Options**

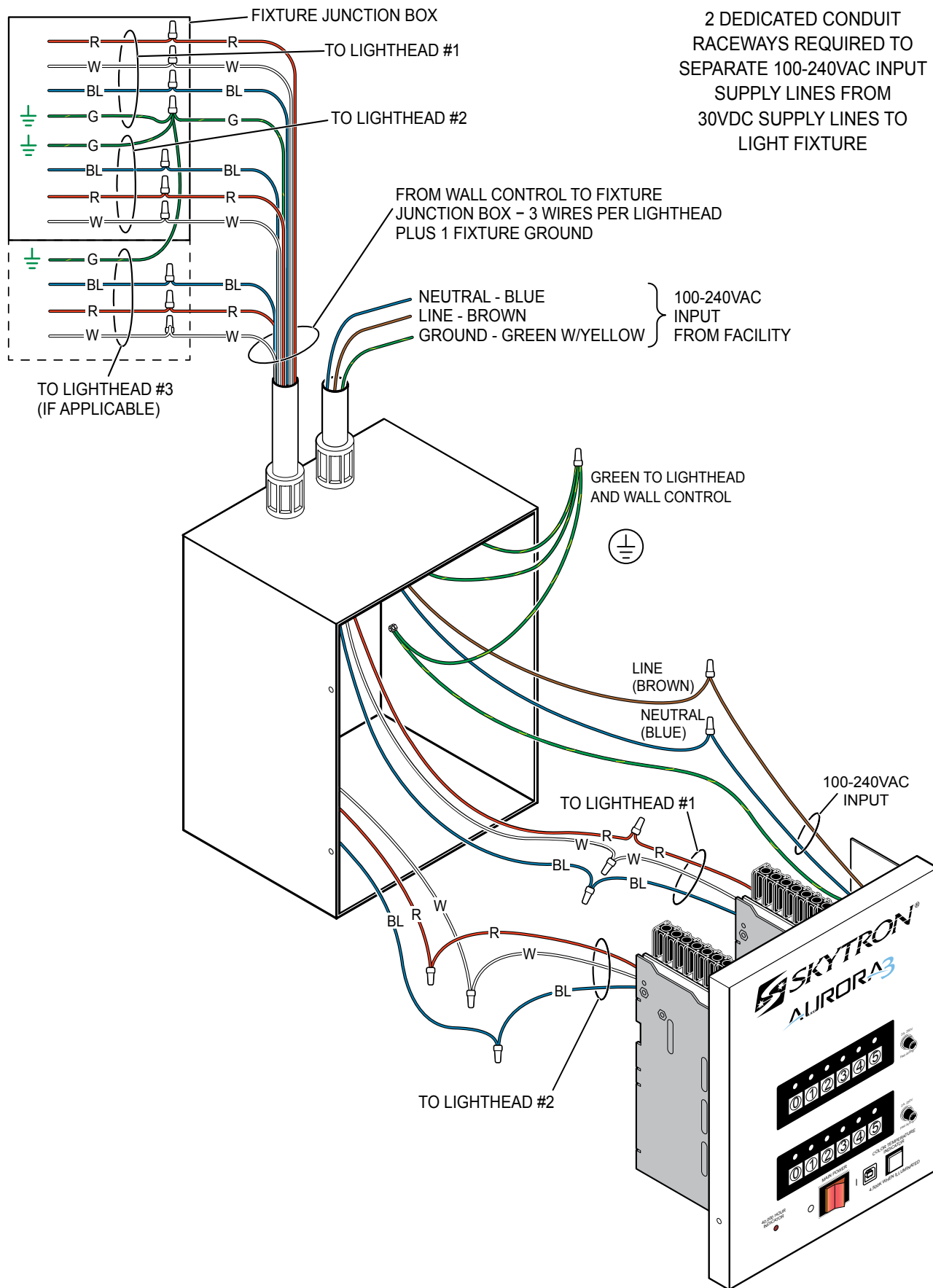


Figure 5-4. Wall Control Wiring



### 5-3. Optional Camera Ready Lighthouse

The optional camera ready system includes a connector faceplate with a 65 ft. cable that connects to the light fixture junction box.

The faceplate is mounted in a 2" x 4" junction box and the cable is run through a 1-1/4" metal conduit to the light fixture junction box. D-sub 9-pin connectors are provided for cable connection at the fixture junction box and at the RAA/VST connection point.

The Camera Ready Lighthouse must be installed with the corresponding camera ready BOM and VST. Refer to fixture diagrams in Section 7.

### 5-4. Install Mounting Hub / RAA



#### CAUTION

**Use a Genie lift or other appropriate lifting device to install each RAA.**

#### NOTICE

The multiple arm assemblies are easier to handle during installation if the arms are left taped and tied together.

- a. The mounting structure should be fabricated of steel and welded or bolted to the structural ceiling. It should be braced in a manner that will allow no twisting or lateral motion.

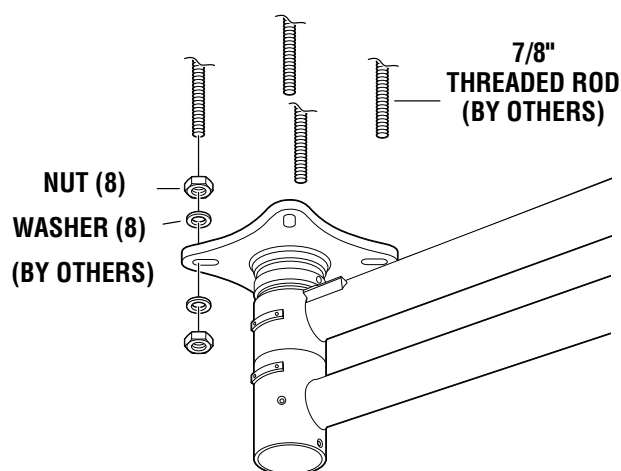
#### NOTICE

See appropriate mounting structure guidelines located in Section 6. All installations require the mounting structure to be tested and comply with SKYTRON test jig requirements.

- b. Install the mounting hub and RAA assembly on the threaded rods between the jam nuts. The bottom of the mounting hub should be located a specific distance from the finished ceiling (specified in the mounting structure guidelines) to ensure proper ceiling cover fit and accurately leveled using a digital level. Tighten the jam nuts securely (Figure 5-5).

#### CAUTION

The mounting hub must be accurately leveled within 0.1° to prevent lighthouse drift.



**Figure 5-5 . Mounting Hub/RAA Installation (LFSLFS Arm Shown)**

- c. Observe wire tags and color codes, then connect the electrical wires from the wall control to the radial arm junction box wires.



#### CAUTION

**Connection of the fixture wires must be made using crimp connectors. Main terminal devices shall be so located or shielded that, should a wire of a stranded conductor escape when the conductors are fitted, there is no risk of accidental contact between live parts and accessible parts. Acceptable shielding methods include UL approved shrink tubing and electrical tape.**

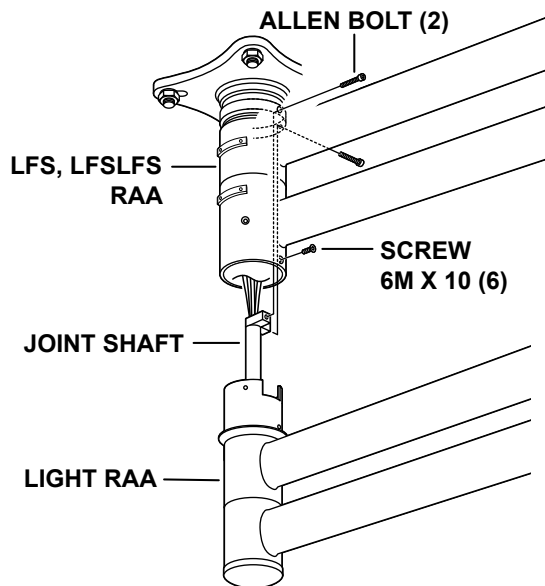
- d. ON LFS models, route all video monitor cabling and power wires through each LFS RAA. If cabling is not available, a pull cable should be routed to ease later installation.

#### NOTICE

An 1-1/4" (30mm) raceway is provided to accommodate video cabling. Refer to flatscreen monitor instructions for specific requirements prior to installation. Always follow manufacturer's specific bend radii and state and local code requirements when installing such cabling.

### 5-5. Install Light RAA (LFS Models Only)

- a. Install the Light RAA into the receptacle of the LFS RAA and secure with six (6) M6 x 10 mounting screws (Figure 5-6). Align the joint shaft of the light RAA to the hub assembly and install two (2) M8 x 30 Allen bolts.



**Figure 5-6. Light RAA Installation**

#### **NOTICE**

Light RAA wires are tagged for proper connection to the wall control (top arm #1, next arm #2, bottom arm [triple arm models] #3).

- b. Observe wire tags and color codes, then connect the electrical wires from the wall control to the radial arm junction box wires.



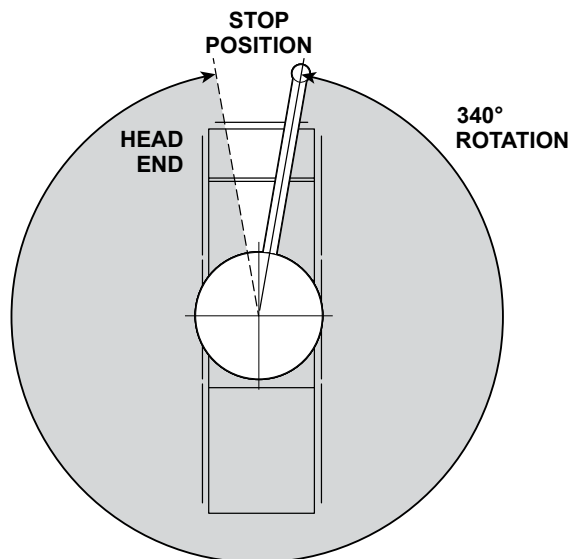
#### **CAUTION**

Connection of the fixture wires must be made using crimp connectors. Main terminal devices shall be so located or shielded that, should a wire of a stranded conductor escape when the conductors are fitted, there is no risk of accidental contact between live parts and accessible parts. Acceptable shielding methods include UL approved shrink tubing and electrical tape.

### 5-6. Adjust RAA Stops

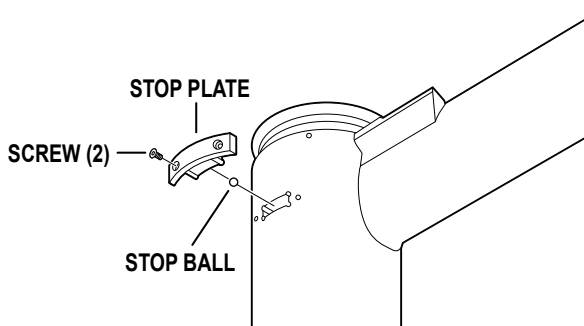
LFS, Extended Arm, and AUT\_H RAA's have a ball stop mechanism that allows up to 340° of rotation in 30° increments. Use the following procedure to set the stop locations:

- a. Determine the degree of stop rotation and the location for the stops based on the room layout. The recommended stop location is over the head end of the table (Figure 5-7). This will allow the most flexibility for positioning the FS monitor or extended arm/hub lights.



**Figure 5-7. Determining RAA Stop Locations**

- b. To alter the stop position (Figure 5-8):



**Figure 5-8. Stop Ball and Stop Plate Removal/Installation**

1. Rotate the upper radial arm until the stop is contacted.
2. Remove the two (2) screws securing the stop plate, then remove the stop plate and stop ball.

3. Rotate the arm to the desired stop position, then install the stop ball and stop plate. Secure the stop plate to the RAA hub using the two (2) screws removed in Step 2.
4. If applicable, repeat Steps 1 through 3 to set the stops for the second RAA.

### 5-7. Install Ceiling Cover(s)

When all adjustments are complete and cables are routed, install the ceiling cover(s) as follows:

#### a. LFS and Extended Arm Models

Position and snap the two (2) ceiling halves together over the groove in the RAA hub as shown in Figure 5-9.

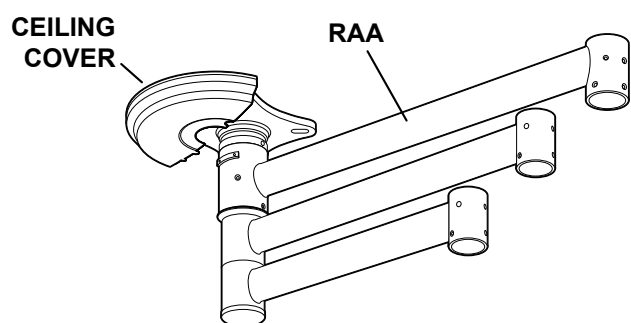


Figure 5-9. LFS and Extended Arm Ceiling Cover

#### b. LFSLFS Model

1. Assemble lower ceiling cover halves over groove in RAA hub as shown in Figure 5-10 using the provided screws and trim washers.

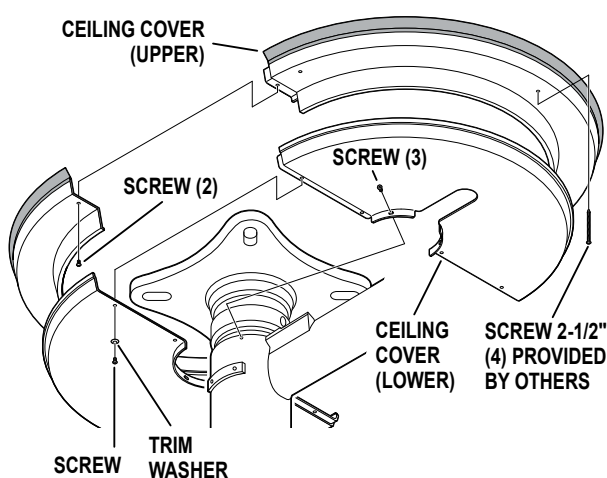


Figure 5-10. LFSLFS Ceiling Covers

2. Assemble the upper ceiling cover halves using provided screws (Figure 5-10). Center the upper cover in the lower cover, then secure the upper cover to the ceiling using appropriate fasteners.

#### c. AUT\_H Covers

1. If fixture hub is located below the finished ceiling, position and snap the two (2) ceiling cover halves together over the groove in the hub as shown in Figure 5-11.

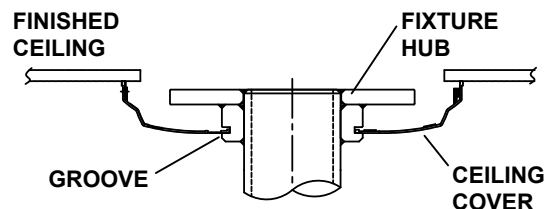


Figure 5-11. AUT\_H Ceiling Cover Installation (Standard Ceiling)

2. If the fixture hub is recessed above the finished ceiling, position and snap the ceiling cover halves together over the groove in the extended hub collar as shown in Figure 5-12.

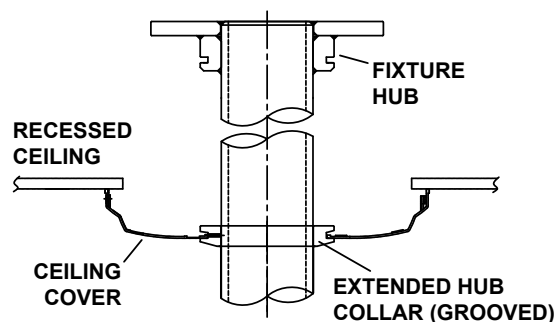


Figure 5-12. AUT\_H Ceiling Cover Installation (Recessed Ceiling)

### NOTICE

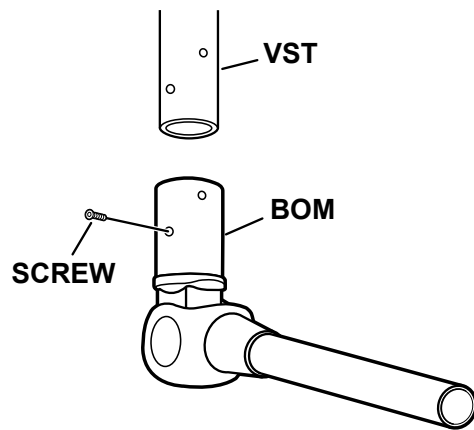
If necessary the extended hub collar can be repositioned up or down the extended hub shaft by loosening the set screws that secure the hub to the shaft, repositioning the hub, and then retightening the set screws.

## 5-8. Install VST and BOM

### NOTICE

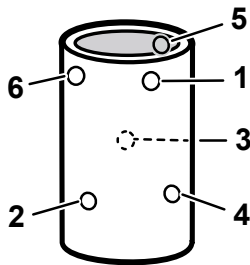
Determine correct placement for each VST and BOM on the RAA. The longest VST goes into the top RAA.

- a. Install the VST on the BOM, apply Blue Loctite® to screw threads and secure VST with the Allen screws provided (Figure 5-13).



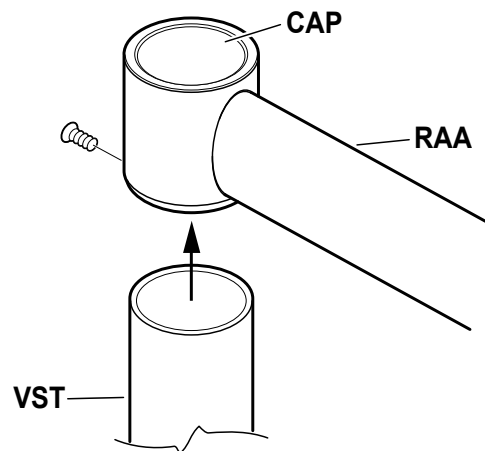
**Figure 5-13 Balance Mechanism (BOM)**

- b. Follow the tightening sequence and torque the screws to 9 ft-lbs (12 Nm) (Figure 5-14).



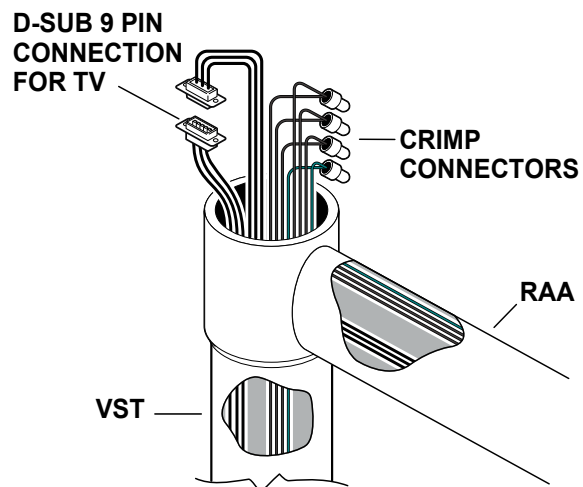
**Figure 5-14. Screw Tightening Sequence**

- c. Insert the VST of VST/BOM assembly into the RAA receptacle (Figure 5-15). Apply Loctite® to screw threads, and secure the BOM/VST assembly with the mounting screws following the tightening sequence (Figure 5-14).



**Figure 5-15. VST/BOM Assembly to RAA**

- d. Remove cap from RAA (Figure 5-15). Pull VST and RAA wires (and connectors for camera ready VST only) up through access hole in RAA (Figure 5-16).

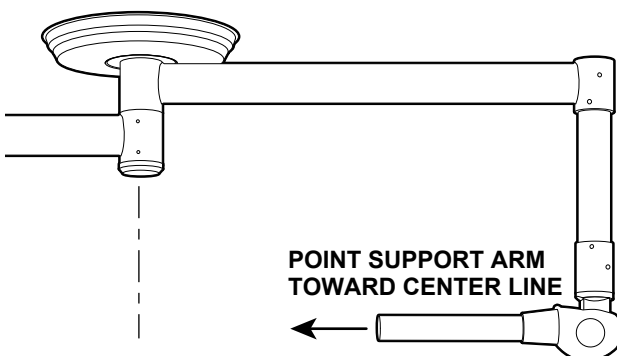


**Figure 5-16. Connect VST/RAA Wires**

- e. Observe the wire colors and connect the wires from the RAA to the corresponding VST wires using crimp connectors (Figure 5-16). Connect D-sub (9-pin) connectors for camera ready VST (if applicable).
- f. Ensure that all wire connections are secure, then place crimped wires and mated connectors inside RAA access hole. Re-install cap removed in Step d.
- g. Repeat Steps a through f for each remaining BOM/VST assembly.

### 5-9. Install AUT7 Lightheads (If Applicable)

- a. To make it easier to install the lighthead, locate the support arm of the BOM so that it points inward toward the ceiling cover (Figure 5-17). This will prevent the radial arm from moving when installing the lighthead.

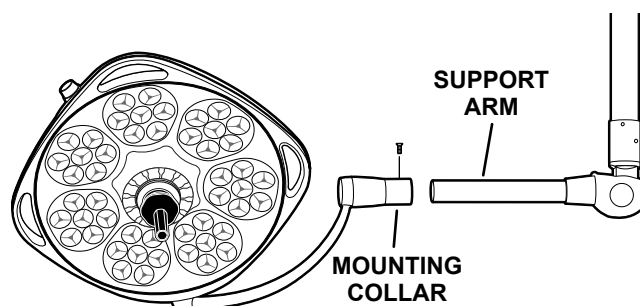


**Figure 5-17. Position for Lighthead Installation**

- b. Remove the six (6) screws from the lighthead support arm.
- c. Install the lighthead mounting collar onto the support arm and secure with the screws removed in Step **b** (Figure 5-18).

#### CAUTION

To prevent support arm damage, the longer screws must be installed in the holes towards the lighthead.

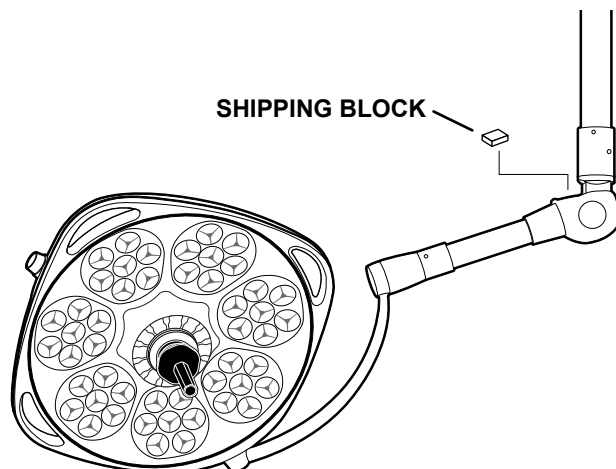


**Figure 5-18. AUT7 Lighthead Installation**

- d. Pull the lighthead down and remove the shipping block from the BOM (Figure 5-19).

#### ! WARNING

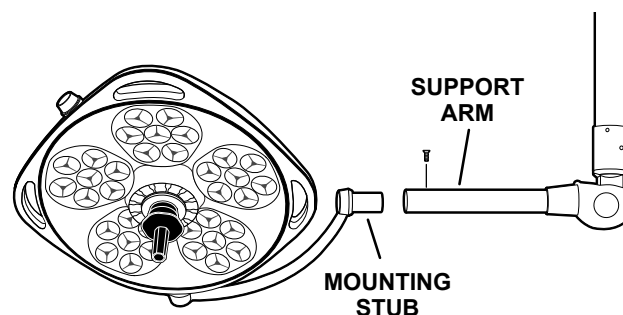
**DO NOT** remove lighthead when support arm is in down position. The BOM will be severely damaged and it may result in bodily injury.



**Figure 5-19. Shipping Block**

### 5-10. Install Model AUT5 Lightheads (If Applicable)

- a. To make it easier to install the lighthead, locate the support arm of the BOM so that it points inward toward the ceiling cover (Refer to Figure 5-17). This will prevent the radial arm from moving when installing the lighthead.
- b. Remove the four (4) screws from the lighthead mounting stub.
- c. Install the lighthead mounting stub into the support arm and secure with the screws previously removed (Figure 5-20).



**Figure 5-20. AUT5 Lighthead Installation**

- d. Pull the lighthead down and remove the shipping block from the BOM (Figure 5-21).

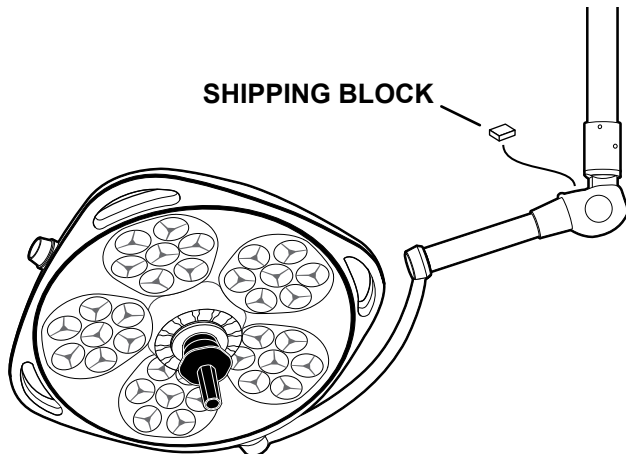


Figure 5-21. Shipping Block



**WARNING**

**DO NOT** remove lighthead when support arm is in down position. The BOM will be severely damaged and it may result in bodily injury.

- e. Repeat Steps **a** through **d** for each additional AUT5 lighthead.

**5-11. Install Flatscreen Mounting Assembly (LFS Models Only)**

Use the following procedure to install each complete flatscreen mount assembly, including upper and lower VSTs, height adjustable arm, and flatscreen mount:

**NOTICE**

As VSTs, height adjustable arm, and flatscreen mount are being assembled, make sure that video cabling/wires from the LFS RAA are routed through them as they are being assembled.

- a. Assemble the upper VST to the LFS RAA using six (6) M6 x 10mm screws (Figure 5-22) using the tightening sequence shown in Figure 5-23.

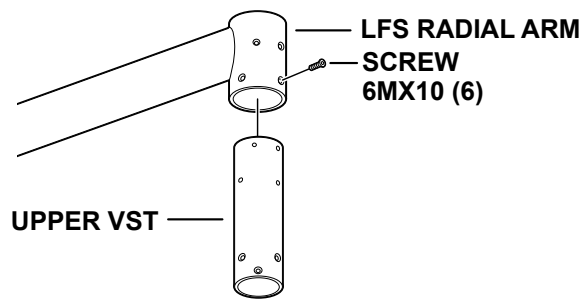


Figure 5-22. Assemble Upper VST

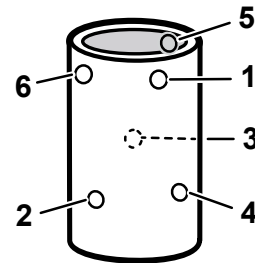


Figure 5-23. Tightening Sequence

- b. Rotate mounting stub of height adjustable arm clockwise until it contacts the stop (Figure 5-24). Align height adjustable arm in line with LFS RAA as shown.

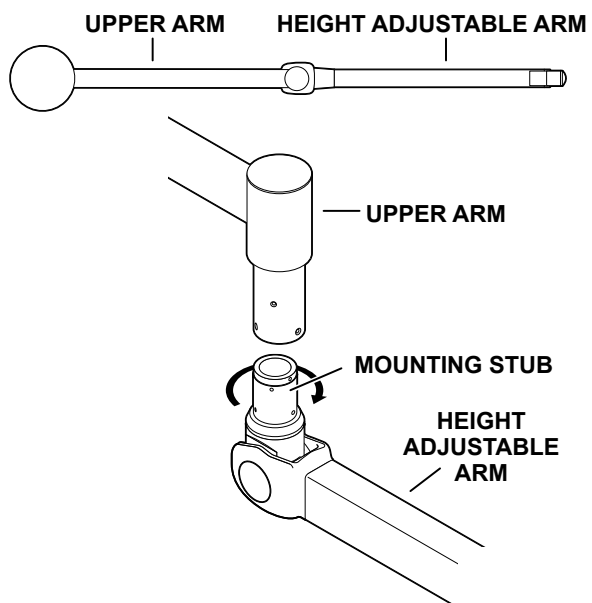
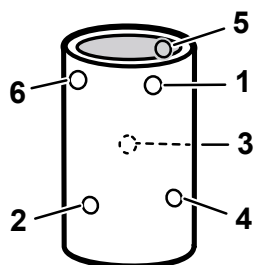


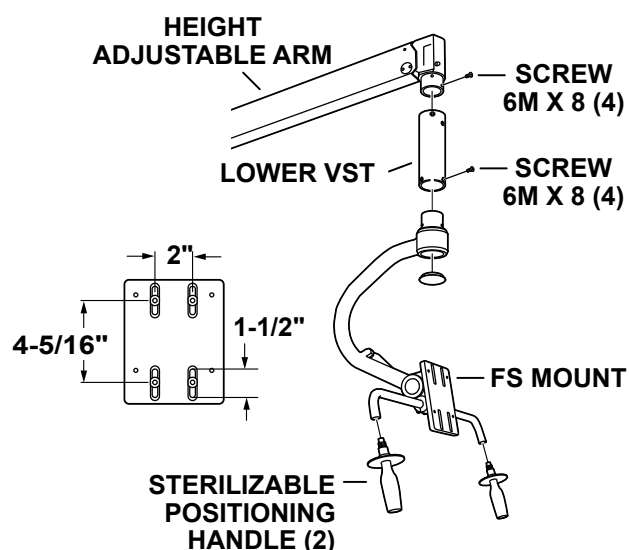
Figure 5-24. Height Adjustable Arm Alignment

c. Apply blue Loctite® to screw threads and assemble the height adjustable arm to the upper VST using six (6) M6 x 10mm screws and the tightening sequence shown in Figure 5-25.



**Figure 5-25. Tightening Sequence**

d. Assemble lower VST to height adjustable arm using four (4) M6 x 8mm screws (Figure 5-26).



**Figure 5-26. Flatscreen Mount**

e. Assemble flat screen mount to lower VST using four (4) M6 x 8mm screws.

f. Install two (2) sterilizable positioning handles (PN B1-410-85).

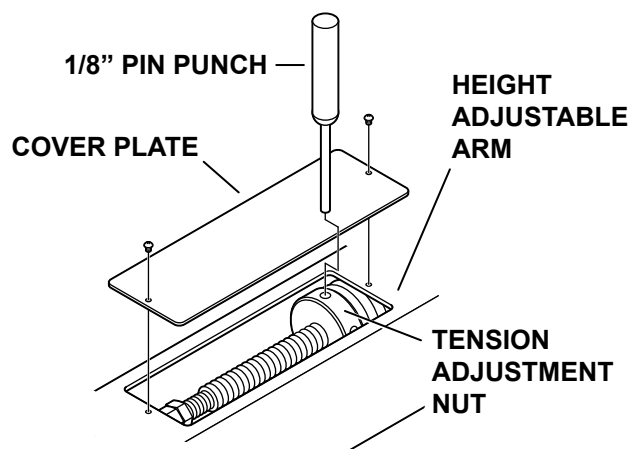
g. If pull string was installed, route all video and power cables through flat screen mount, lower VST, height adjustable arm, upper VST, LFS RAA and hub.

h. Install flatscreen monitor according to manufacturer's instructions and connect all video and power cables.

## 5-12. Fixture Adjustments

### a. Flatscreen Monitor (Vertical Tension)

Check the vertical tension adjustment of the height adjustable arm for its capacity to support the flatscreen monitor throughout its range of movement. The monitor should move freely yet maintain its selected position without drifting. If the monitor drifts, make a vertical tension adjustment as follows (Figure 5-27):



**Figure 5-27. Vertical Tension Adjustment**

1. Remove two (2) screws securing the cover plate to the top of the height adjustable arm to access the tension adjustment nut. Set the screws and cover plate aside.
2. Insert a 1/8" pin punch into a hole in the adjustment nut and turn the nut as required to achieve proper tension.
  - Turn adjustment nut clockwise to increase tension.
  - Turn adjustment nut counterclockwise to decrease tension.

### NOTICE

The system can support and balance a monitor weight of up to 20 pounds (9.0 kg). Exceeding the weight will result in poor balance and performance.

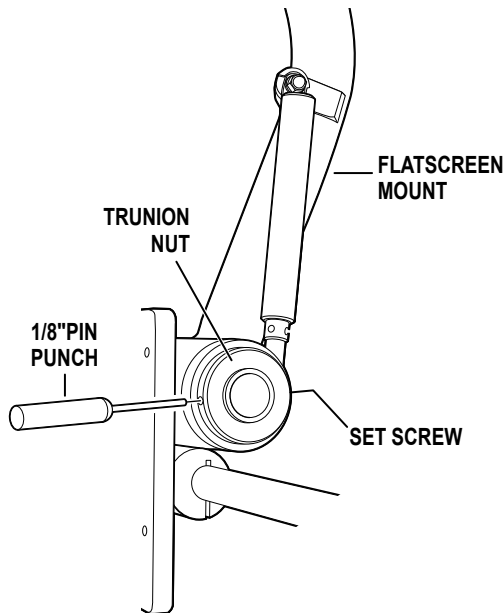
3. Replace the access cover using the two (2) screws removed in Step 1.



### b. Flatscreen Monitor (Pitch Axis)

Check the adjustment for the flatscreen monitor pitch axis. The monitor should move freely yet maintain its selected position without drifting. If the monitor drifts, make a pitch axis adjustment as follows:

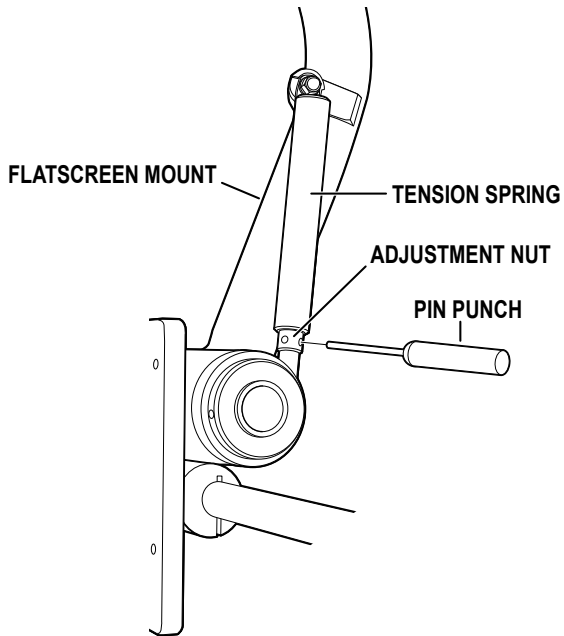
If a coarse adjustment is needed (Figure 5-28):



**Figure 5-28. Pitch Axis (Coarse) Adjustment**

1. Loosen the set screw on the trunion nut, then insert 1/8" pin punch in the hole opposite the set screw location and adjust the trunion nut as required.
  - Turn trunion nut clockwise to increase tension.
  - Turn trunion nut counterclockwise to decrease tension.
2. Tighten set screw when the adjustment is complete.

If a fine adjustment is needed (Figure 5-29):



**Figure 5-29. Pitch Axis (Fine) Adjustment**

1. Rotate the monitor downward until the adjustment nut is visible on the tension spring assembly.
2. Use a pin punch to turn the adjustment nut until proper tension is achieved.
  - Turn adjustment nut clockwise to increase tension.
  - Turn adjustment nut counterclockwise to decrease tension.

### c. Light Fixtures

Check all light fixture positioning axis adjustments and adjust as required. Refer to the service manual for instructions on positioning axis adjustments.



## SECTION 6. MOUNTING STRUCTURE GUIDELINES

The mounting structure of a Skytron fixture should always be considered the most important detail of any project prior to installation. Skytron's ceiling mounted systems depend upon properly designed and installed mounting structures to deliver years of dependable performance.

These mounting structure guidelines are a successful, proven design. The design consists of a welded, "flanged pipe" assembly combined with (4) angled sway braces ("kickers"). A structural steel pipe combined with welded steel plates on each end facilitate its attachment to the structural ceiling and provide an attachment point for the Skytron fixture.

This design eliminates "guess work" by the steel fabricator when compared to structures that are fabricated on site with angle iron. In many cases the "flanged pipe" assembly can be pre-fabricated, reducing the on-site construction time.

Once the structures are fabricated, an on-site performance test can be done. The performance test of the structure involves hanging a "test jig" from the structure, and then measuring the amount of deflection that occurs at the mounting plate using a digital level. The test jig is similar in size, shape, and weight to the Skytron fixtures.

Deflection of the mounting plate causes the radial arm(s) to become out of level and drift. For a structure to meet Skytron specifications, we require that the mounting plate does not have more than two-tenths of a degree of deflection while loaded with the specified weight and moment.

The testing process should occur in the early stages of construction, to provide optimal time if additional reinforcement is needed on the structure, and should be performed prior to the completion of the finished ceiling.

The final responsibility to insure that the structure is adequate and meets specification lies with the structural engineer and the contractor for the project.

Contact Skytron for Test Jig availability

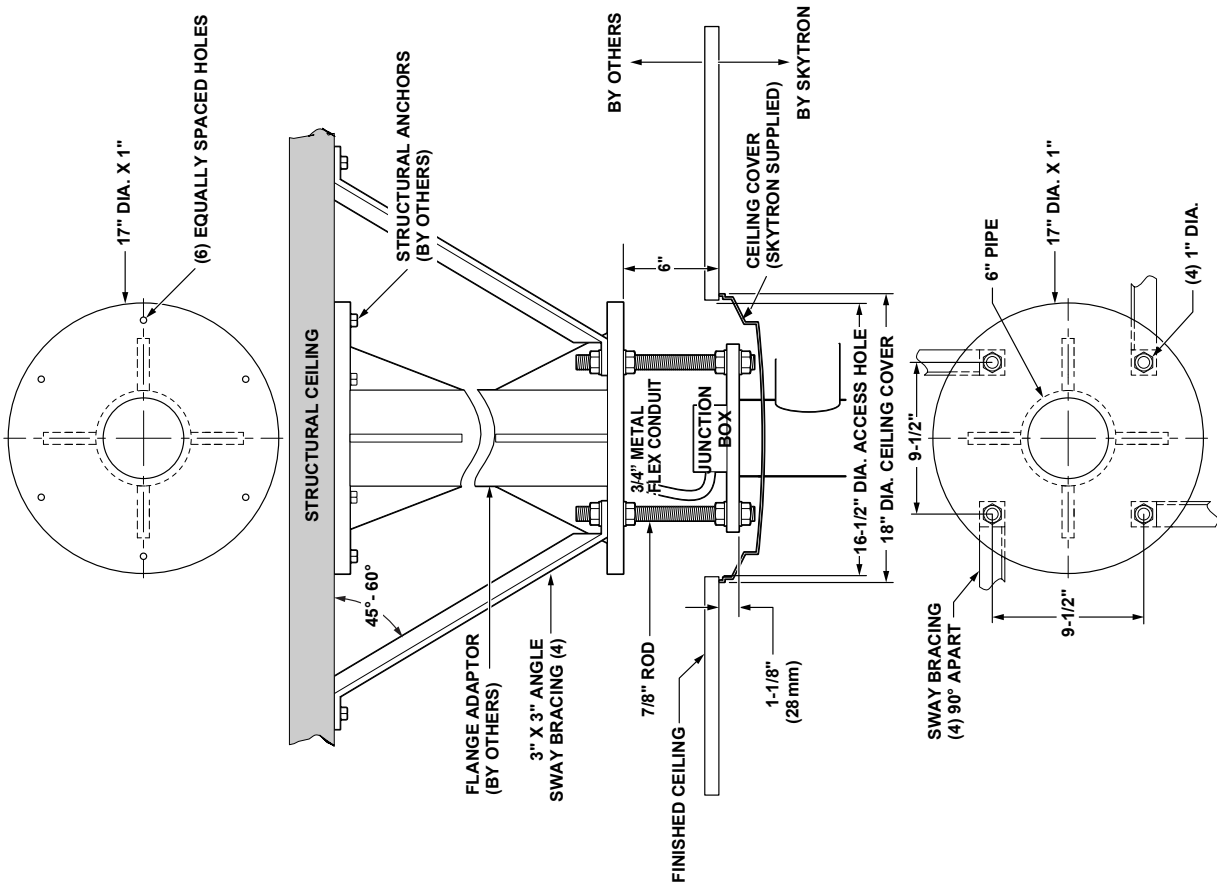
6-1. LFSAUT and Extended Arm Mounting Structure Guideline

NOTES

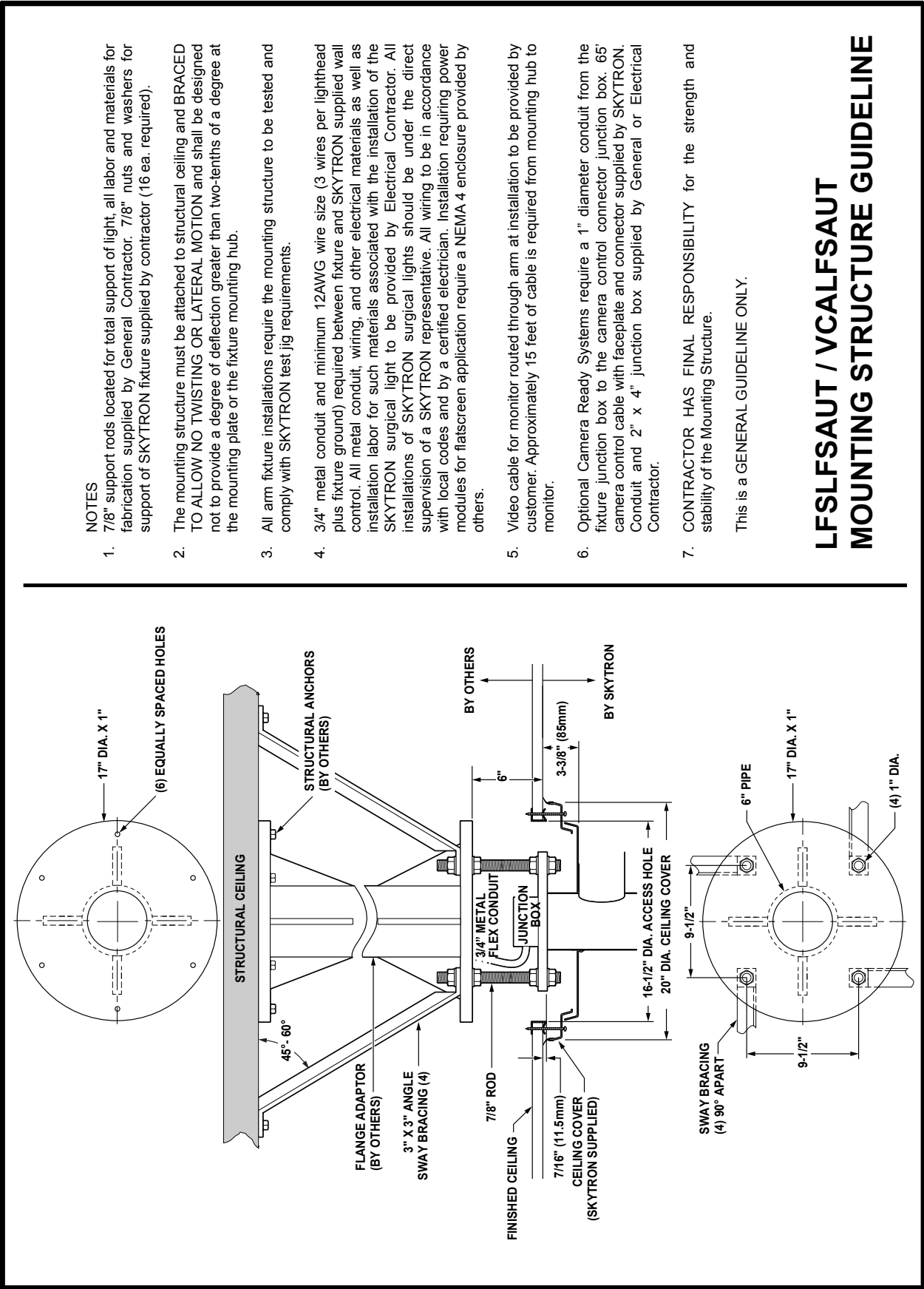
1. 7/8" support rods located for total support of light, all labor and materials for fabrication supplied by General Contractor. 7/8" nuts and washers for support of SKYTRON fixture supplied by contractor (16 ea. required).
2. The mounting structure must be attached to structural ceiling and BRACED TO ALLOW NO TWISTING OR LATERAL MOTION and shall be designed not to provide a degree of deflection greater than two-tenths of a degree at the mounting plate or the fixture mounting hub.
3. All arm fixture installations require the mounting structure to be tested and comply with SKYTRON test jig requirements.
4. 3/4" metal conduit and minimum 12AWG wire size (3 wires per lighthead plus fixture ground) required between fixture and SKYTRON supplied wall control. All metal conduit, wiring, and other electrical materials as well as installation labor for such materials associated with the installation of the SKYTRON surgical light to be provided by Electrical Contractor. All installations of SKYTRON surgical lights should be under the direct supervision of a SKYTRON representative. All wiring to be in accordance with local codes and by a certified electrician. Installation requiring power modules for flatscreen application require a NEMA 4 enclosure provided by others.
5. Video cable for monitor routed through arm at installation to be provided by customer. Approximately 15 feet of cable is required from mounting hub to monitor.
6. Optional Camera Ready Systems require a 1" diameter conduit from the fixture junction box to the camera control connector junction box. 65' camera control cable with faceplate and connector supplied by SKYTRON. Conduit and 2" x 4" junction box supplied by General or Electrical Contractor.
7. CONTRACTOR HAS FINAL RESPONSIBILITY for the strength and stability of the Mounting Structure.

This is a GENERAL GUIDELINE ONLY.

LFSAUT / VCAUT / EXTENDED ARM  
MOUNTING STRUCTURE GUIDELINE

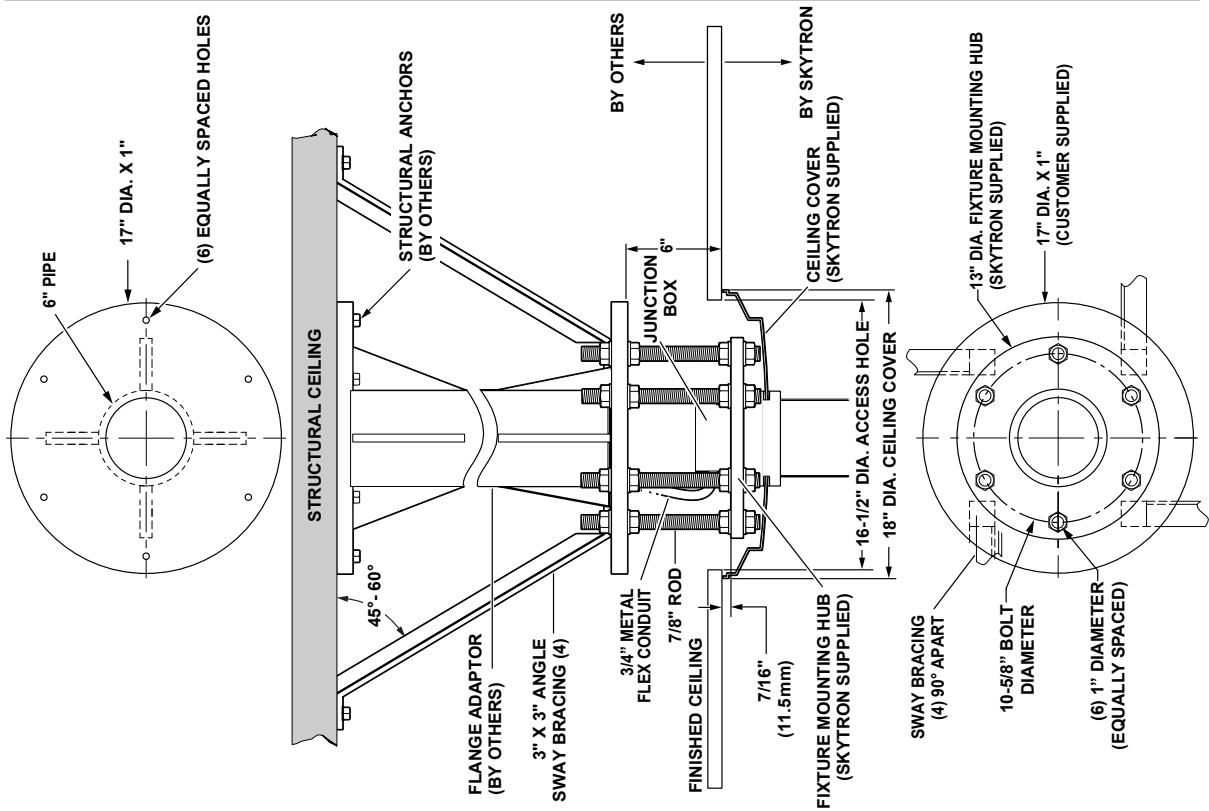


# 6-2. LFSLFSAUT Mounting Structure Guideline



## LFSLFSAUT / VCAFLSAUT MOUNTING STRUCTURE GUIDELINE

6-3. AUT\_H Mounting Structure Guideline



NOTES

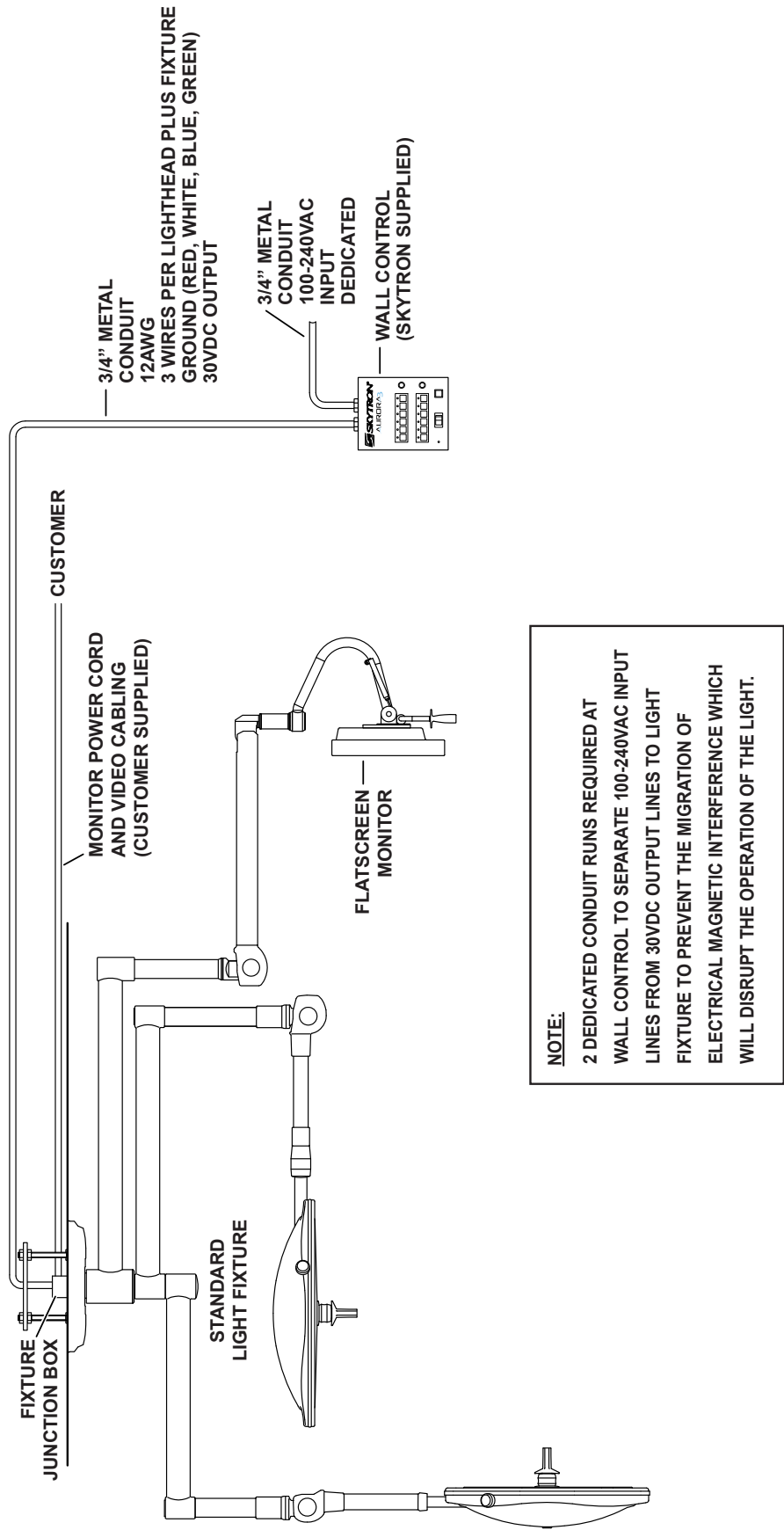
1. 7/8" support rods located for total support of light, all labor and materials for fabrication supplied by General Contractor. 7/8" nuts and washers for support of SKYTRON fixture supplied by contractor (24 ea. required).
2. The mounting structure must be attached to structural ceiling and BRACED TO ALLOW NO TWISTING OR LATERAL MOTION and shall be designed not to provide a degree of deflection greater than two-tenths of a degree at the mounting plate or the fixture mounting hub.
3. All arm fixture installations require the mounting structure to be tested and comply with SKYTRON test jig requirements.
4. 3/4" metal conduit and minimum 12AWG wire size (3 wires per lighthouse plus fixture ground) required between fixture and SKYTRON supplied wall control. All metal conduit, wiring, and other electrical materials as well as installation labor for such materials associated with the installation of the SKYTRON surgical light to be provided by Electrical Contractor. All installations of SKYTRON surgical lights should be under the direct supervision of a SKYTRON representative. All wiring to be in accordance with local codes and by a certified electrician.
5. Optional Camera Ready Systems require a 1" diameter conduit from the fixture junction box to the camera control connector junction box. 65' camera control cable with faceplate and connector supplied by SKYTRON. Conduit and 2" x 4" junction box supplied by General or Electrical Contractor.
6. CONTRACTOR HAS FINAL RESPONSIBILITY for the strength and stability of the Mounting Structure.

This is a GENERAL GUIDELINE ONLY.

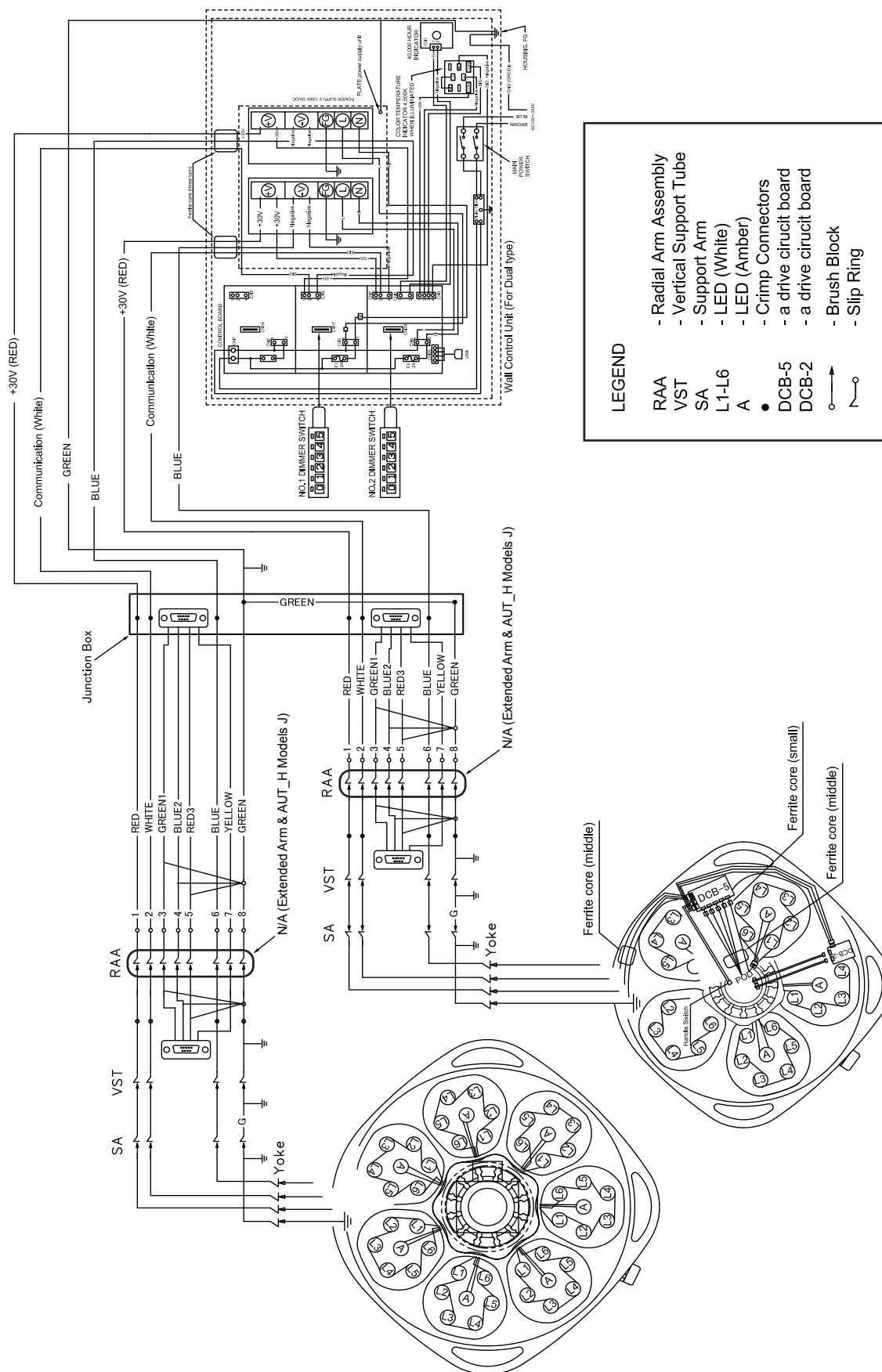
AUT\_H  
MOUNTING STRUCTURE GUIDELINE

SECTION 7. INSTALLATION DRAWINGS

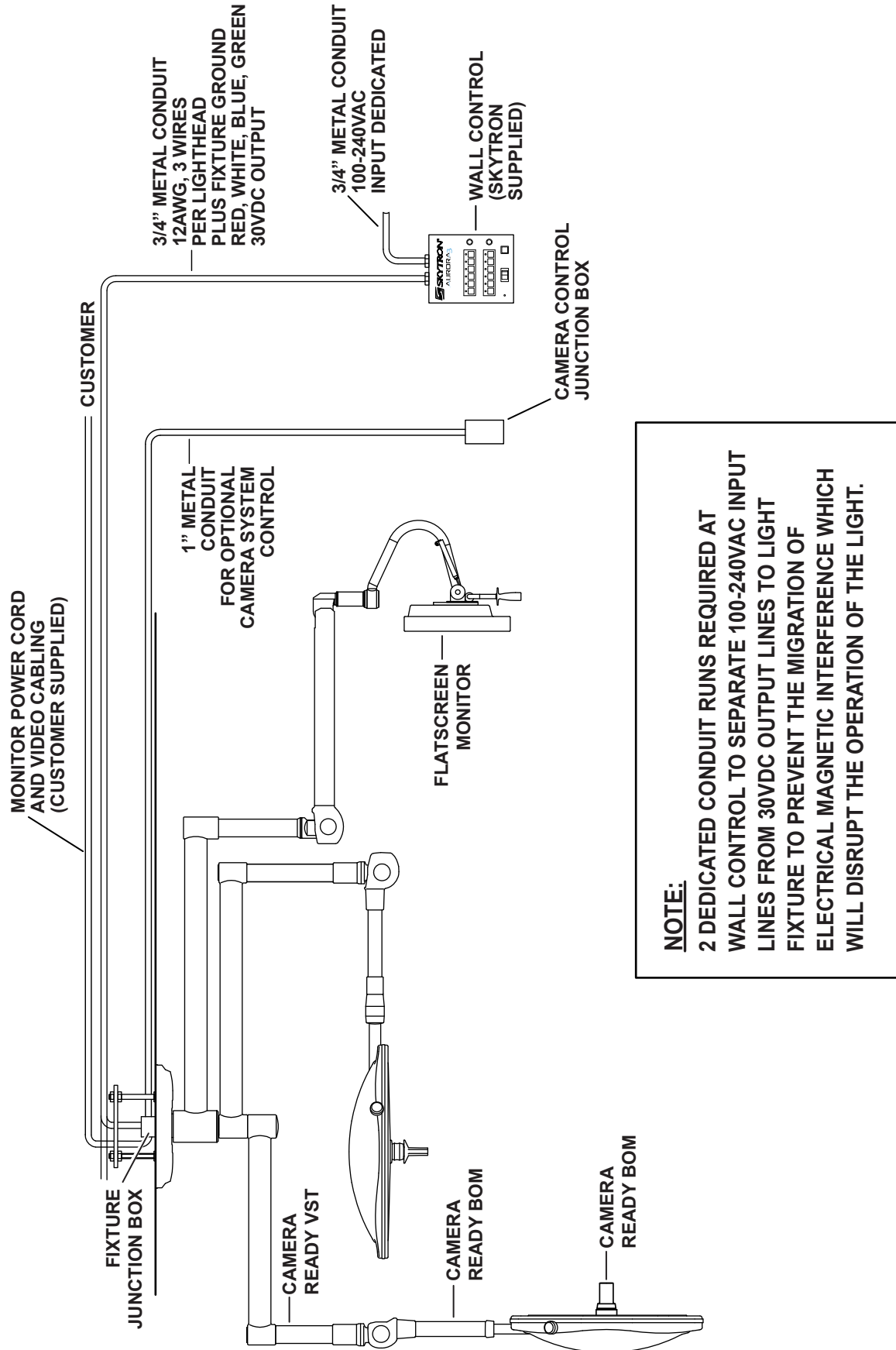
7-1. Typical Light Fixture Conduit and Wiring Requirements (LFSAUT55 Shown)

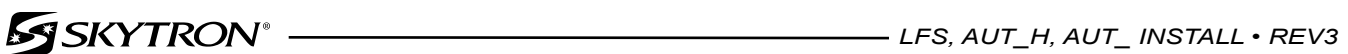


## 7-2. Typical Wiring Diagram



### 7-3. Typical Light Fixture Conduit and Wiring Requirements (LFSAUT55TV Shown)







## SECTION 8. REVISION HISTORY

Date	Revision	Revision History
08/28/2014	3	<ul style="list-style-type: none"><li>• Added EC-REP to inside cover and on Page 4</li><li>• Added Revision History section on Page 31.</li></ul>



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